Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for predicting the behavior of a technical system starting from prescribed system properties, boundary conditions, and/or starting from prescribed influences on the system, the method which comprises the following steps:

providing a computer system;

providing a system of equations describing the technical system, the equations having the form $\underline{f}\left(t, \underline{x}(t), \underline{\dot{x}}(t), ..., \underline{x}^{(k)}(t), \underline{p}\right) = \underline{0}$, ~~and~~-including:

$$f_1\left(t, \underline{x}(t), \underline{\dot{x}}(t), ...\underline{x}^{(k)}(t)\underline{p}\right) = 0,$$

$$f_2\left(t, \underline{x}(t), \underline{\dot{x}}(t), ..., \underline{x}^{(k)}(t), \underline{p}\right) [[\approx]] \underline{=} 0,$$

$$\vdots$$

$$f_n\left(t, \underline{x}(t), \underline{\dot{x}}(t), ..., \underline{x}^{(k)}(t), \underline{p}\right) = 0,$$

wherein $\underline{x}(t)$ and derivatives $\underline{\dot{x}}(t), ..., \underline{x}^{(k)}$ thereof in each case have m number of elements, and $\underline{p}$ is a parameter vector that can occur in the system of equations; and

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executing a test method for providing error information relating to inconsistencies in the system of equations on the computer system, the test method having the following steps 1 to 3:

step 1: setting up a dependence matrix $\underline{A}$ with m number of columns and n number of rows, and setting an element $\underline{A}$ to

$\underline{A}(i,j) \neq 0$ when an ith row of [[$\underline{f}$]] $\underline{f}\left(t, \underline{x}(t), \underline{\dot{x}}(t), ..., \underline{x}^{(k)}(t), p\right)$ defined with $\underline{f}_i\left(t, \underline{x}(t), \underline{\dot{x}}(t), ..., \underline{x}^{(k)}(t)\right)$ [[τ]]) is a function of

    a) a jth element of $\underline{x}$ expressed as $\underline{x}_j(t)$; or

    b) one of the derivatives of the jth element of $\underline{x}$ defined as $\underline{x}_j^{(s)}(t)$;

and otherwise setting the element [[$\underline{A}$]] $\underline{A}(i,j) = 0$;

step 2: determining a set of row ranks each having ~~the~~ numbers of those rows of the dependence matrix $\underline{A}$ that are mutually dependent and determining a set of column ranks of the dependence matrix $\underline{A}$ each having ~~the~~ numbers of those columns of the dependence matrix $\underline{A}$ that are mutually dependent if such row ranks and/or column ranks are present; and

step 3: outputting error information containing the numbers

contained in each row rank determined in step 2 and in each

column rank determined in step 2;

wherein the row rank includes a set C_2 of natural numbers i,

where $1 \leq i \leq n$, of the matrix A with the n number of rows and

the m number of columns when it fulfils the conditions of:

i) no transversal T of the matrix A such that C_2 is contained

in the set of row indices of T, and

ii) for each element c of C_2 there is a transversal T of the

matrix A such that $C_2 \backslash \{c\}$ is wholly contained in the set of

the row indices of T,

and

the column rank comprises a set C_3 of natural numbers i, where

$1 \leq i \leq m$, of the matrix A with the n number of rows and the m

number of columns when it fulfils the conditions of:

i) no transversal T of the matrix A such that C_3 is contained

in the set of row indices of T, and

ii) for each element c of C_s there is a transversal T of the matrix A such that $C_s\backslash\{c\}$ is wholly contained in the set of the column indices of T.

Claim 2 (currently amended):   The method according to claim 1, which further comprises:

prior to executing step 1:

> applying an equation significance list of length of the n number in which each equation of the system of equations is assigned at least one of an equation number and an item of equation text information; and

> applying a component significance list of length of the m number in which each component of a solution vector x is assigned at least one of a component number and an item of component text information;

in step 3, outputting at least one of the equation number and the item of equation text information in accordance with the equation significance list instead of outputting the numbers contained in each row rank; and

in step 3, outputting at least one of the component number and the item of component text information in accordance with the

component significance list instead of outputting the numbers

contained in each column rank.

Claim 3 (original): A computer program with computer-

executable instructions for executing a method for numerical

simulation of a technical system according to claim 1.

Claim 4 (original): A computer program with computer-

executable instructions for executing a method for numerical

simulation of a technical system according to claim 2.

Claim 5 (original): A computer system programmed to execute a

method for numerical simulation of a technical system

according to claim 1.

Claim 6 (original): A computer system programmed to execute a

method for numerical simulation of a technical system

according to claim 2.

Claim 7 (original): A computer-readable medium having

computer-executable instructions for performing the method

according to claim 1.

Claim 8 (original): A computer-related method, comprising:

downloading a computer program product or a computer program

with computer-executable instructions for executing a method

for numerical simulation of a technical system according to

claim 1 from an electronic data network onto a computer

connected to the data network.

Claim 9 (original): The method according to claim 8, wherein

the electronic data network is the Internet.

Claim 10 (currently amended): A computer program product and

computer program for providing error information relating to

inconsistencies in a system of equations to be solved with ~~the~~

~~aid of a computer program running on a computer or with the~~

~~aid of an analog computer, which product is designed in such a~~

~~way that it is possible to execute~~ a method ~~for providing~~

~~error information relating to inconsistencies in a system of~~

~~equations to be solved~~ with the aid of a ~~computer program~~

~~running on a~~ computer or with the aid of an analog computer

and <u>system of equations</u> is of the form $\underline{f}(t,\underline{x}(t),\underline{\dot{x}}(t),...,\underline{x}^{(k)}(t),\underline{p})=\underline{0}$,

~~that is to say~~<u>including</u>:

$$f_1(t,\underline{x}(t),\underline{\dot{x}}(t),...,\underline{x}^{(k)}(t),\underline{p})=0,$$

$$f_2(t,\underline{x}(t),\underline{\dot{x}}(t),...,\underline{x}^{(k)}(t),\underline{p})=\underline{0},$$

$$\vdots$$

$$f_n(t,\underline{x}(t),\underline{\dot{x}}(t),...,\underline{x}^{(k)}(t),\underline{p})=\underline{0},$$

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where $\underline{x}$(t) and derivatives $\dot{x}(t),...,x^{(k)}(t)$ thereof respectively have

m number of elements, and $\underline{p}$ is a parameter vector that can

occur in the system of equations; and

the method comprising the following steps:

step 1: setting up a dependence matrix $\underline{A}$ with m number of

columns and n number of rows, and setting an element $\underline{A}$ to

$\underline{A}(i,j) \neq 0$ when an ith row of [[$\underline{f}$]] $\underline{f}(t,\underline{x}(t),\dot{x}(t),...,x^{(k)}(t),p)$ defined with

$\underline{f}_i(t,\underline{x}(t),\dot{x}(t),...,\underline{x}^{(k)}(t)$ [[τ]]) is a function of

   a) a jth element of $\underline{x}$ expressed as $\underline{x}_j$(t); or

   b) one of the derivatives of the jth element of $\underline{x}$ defined

   as $\underline{x}_j^{(s)}$(t);

and otherwise setting the element $\underline{A}(i,j) = 0$;

step 2: determining a set of row ranks each having ~~the~~ numbers

of those rows of the dependence matrix $\underline{A}$ that are mutually

dependent and determining a set of column ranks of the

dependence matrix $\underline{A}$ each having ~~the~~ numbers of those columns

of the dependence matrix $\underline{A}$ that are mutually dependent if such

row ranks and/or column ranks are present; ~~and~~

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step 3: outputting error information containing the numbers contained in each row rank determined in step 2 and in each column rank determined in step 2; and

the row rank includes a set C_2 of natural numbers i, where $1 \leq i \leq n$, of the matrix A with the n number of rows and the m number of columns when it fulfils the conditions of:

i) no transversal T of the matrix A such that C_2 is contained in the set of row indices of T, and

ii) for each element c of C_2 there is a transversal T of the matrix A such that $C_2 \backslash \{c\}$ is wholly contained in the set of the row indices of T,
and

the column rank comprises a set C_3 of natural numbers i, where $1 \leq i \leq m$, of the matrix A with the n number of rows and the m number of columns when it fulfils the conditions of:

i) no transversal T of the matrix A such that C_3 is contained in the set of row indices of T, and

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ii) for each element c of C_s there is a transversal T of the
matrix $\underline{A}$ such that $C_s\backslash\{c\}$ is wholly contained in the set of
the column indices of T.

Claim 11 (currently amended): The computer program product
and computer program according to claim 10, wherein the method
for providing error information relating to inconsistencies
further comprises:

prior to executing step 1:

    applying an equation significance list of length of the n
    number in which each equation of the system of equations
    is assigned at least one of an equation number and an
    item of equation text information; and

    applying a component significance list of length of the m
    number in which each component of a solution vector $\underline{x}$ is
    assigned at least one of a component number and an item
    of component text information;

in step 3, outputting at least one of the equation number and
the item of equation text information in accordance with the
equation significance list instead of outputting the numbers
contained in each row rank; and

in step 3, outputting at least one of the component number and the item of component text information in accordance with the component significance list instead of outputting the numbers contained in each column rank.

Claim 12 (original):   A data carrier with a computer program product or computer program according to claim 10.

Claim 13 (original):   A data carrier with a computer program product or computer program according to claim 11.

Claim 14 (original):   The computer program product or computer program according to claim 10 carried in a computer-readable medium.

Claim 15 (original):   The computer program product or computer program according to claim 11 carried in a computer-readable medium.

Claim 16 (original):   A computer system programmed to execute the instructions contained in the computer program product or computer program according to claim 10.

Claim 17 (original): A computer system programmed to execute the instructions contained in the computer program product or computer program according to claim 11.

Claim 18 (original): A method for predicting a behavior of a system, which comprises programming the computer system according to claim 16 with at least one of prescribed system properties, boundary conditions, and starting from prescribed influences on the system, and predicting the behavior of the system by executing the computer program.

Claim 19 (original): A computer-related method, comprising: downloading a computer program product or a computer program according to claim 10 from an electronic data network onto a computer connected to the data network.

Claim 20 (original): The method according to claim 19, wherein the electronic data network is the Internet.